DOCUMENT RESUME

ED 083 252 SP 007 452

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TITLE	Francis Howell Teachers Speak. An Evaluation of Issues for Experienced Teachers. Report Series #79.
INSTITUTION	Texas Univ., Austin. Research and Development Center for Teacher Education.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	[72]
CONTRACT	OEC-6-108
NOTE	10p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Inquiry Training; Inservice Programs; *Science Curriculum; *Teacher Attitudes; *Teacher Guidance; Teacher Programs
IDENTIFIERS	Inquiry Oriented Curriculum

ABSTRACT

This document reports on a 2-day meeting which began with introductory sessions designed around the self-directed planning guides for personalizing learning in science developed by the Research and Development Center for Teacher Education of the University of Texas. Working with this inquiry-oriented science curriculum, it is reported, served as preparation for the teachers' first experience with the children on the second day. It is stated that the reality of direct involvement with children was used to help the teacher direct his or her task to the adequacies of the curriculum materials. Teachers' comments on the experience are divided under the headings of the the tnree main dimensions of inquiry-oriented teaching, as they saw them: supply sergeant (finding essential stuff needed for the first-hand experience); intelligence officer (knowing the stuff in ways that will facilitate children's learning); and chaplain (knowing how and when to listen, and encourage and provide guidance as needed to children). Included are charts showing results of data on teachers' comments. (JA)

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Francis Howell Teachers Speak

An Evaluation of Issues for Experienced Teachers

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Report Series #79

SP 007 452

The research presented herein was performed pursuant to Contract #OE - 6 - 108 (Research and Development Center for Teacher Education, The University of Texas at Austin) with the Office of Education, U. S. Department of Health, Education and Welfare.

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Evaluation Report

for

Francis Howell School District

As part of the "Year Around Inservice" strategy of the Francis Howell School District Title III project, inquiry-oriented strategies for science instruction were introduced in a two-day meeting in March. This introduction was designed around the self-directed planning guides for personalizing learning in science developed by the staff of the University of Texas Research and Development Center for Teacher Education.

Most of the participants were female. Their teaching experience ranged from one to twenty-six years with an average of eight years. They had had an average of nine college credits in science and mathematics with a range from two to twenty-seven. The college education courses ranged from six to thirty-six with an average of seventeen. During their college years, they showed above average performance with most of the group securing above C average in college courses. During the introductory sessions, the participating teachers worked with inquiry-oriented science curriculum and equipment (SAPA & ESS) in preparation for their first experience with children on the second day. The reality of direct involvement with children was used to help the teacher to personally direct his or her attention to the adequacies of the curriculum materials, the task of preparing for the use of it with children and the delight of watching and participating in the glow of satisfaction which characterizes children when they can <u>do while learning</u>! The teacher's reaction to the experience was revealing. Some of their comments clearly focused on what they perceived as the three main dimensions of inquiry-oriented teaching.

Supply Sergeant - finding essential stuff needed for first-hand experience.

Intelligence Officer - knowing how to use the stuff in ways that will facilitate children's learning.

Chaplain - knowing how and when to listen, encourage and provide guidance as needed to children.

For the <u>Supply Sergeant</u> dimension of science teaching, they said:

1. I need a lot more time to become familiar with this science lab to be able to use it effectively in a classroom.
2. I came to notice that teaching science takes a lot of equipment and preparation; the children seem to enjoy it; I think it's fun.
3. I feel the program needs one main source that tells all the equipment available. I felt like I did not know where to begin. I

found the manuals confusing.

4. I have learned to use the materials available and the aid of the guide.
5. I need to be more familiar with material to present a well ordered instruction, to be able to ask directed questions.

Other comments clearly illustrated their need to know more - the Intelligence Officer function:

1. I need more training in the use of the program so as to be able to use the program more effectively.
2. The program is very well done, but a higher level sometimes is based on a lower level. Therefore, some units might be difficult to use with higher grade levels.
3. I think I was able to convey the idea better than I thought possible. At least the student seemed to have fulfilled the objectives.
4. You must be able to tell the child what you expect him to do in many ways.
5. I worked on classifying objects. It was kind of fun to experiment with the different things to see all the ways you could classify a single collection of things -- ways I didn't even think of!
6. I wondered how much prompting should be given. For instance, in the collection of cucumbers and green peppers, we had been classifying by color until that point. When we got to green peppers and cucumbers she started to classify by taste. It was difficult to get her to see texture and appearance.
7. The suggested way of doing something is not always the way chosen by the child.
8. I surprised myself in that we melted a plastic container and we were able to make a learning experience out of the situation. We discussed the materials that the jars (containers) were made out of.
9. I need to be more specific in giving directions to students.
10. The program is set up in such a way that the concept of measuring that we taught provided a lot of opportunity for exploration and discovery on the child's part.
11. Use activities you feel the child as well as you are interested in. Adjust these activities to reach the desired objectives if necessary.
12. As a teacher I must learn to control my desire to show the student how to perform an activity and robbing him of the benefit of learning from his mistakes and also of unexpected learnings that occur.
13. I need to find an even more thorough way to show something when he needs help.
14. Actually doing it himself is better.
15. A lot of work for an objective that is much advanced for elementary (physics).

A third role of the teacher emerged very strongly and somewhat to the surprise of many of the participating teachers - the Chaplain's role. This requires a teacher to stop - watch what children are doing, listen to their responses and questions and then provide encouragement and guidance. They saw:

1. I've learned that children need less instruction than I usually give.
2. To use these labs a teacher needs to be flexible to go to the level that fits the child.
3. Listening to the pupil helps you get more interested in the task.
4. We must take more time to listen to children's ideas.
5. I learned to listen more keenly to the kids and not to anticipate responses.
6. You can use more discussion with the student when there is only one.
7. Some children are not at ease when you first meet with them. It is necessary for teachers to make the children feel at ease with no fear or anxiety. A need for good climate or atmosphere is essential for learning to take place.
8. In a one-to-one situation the teacher can easily adapt ways of expression in order to reach the child.
9. I learned from the program that work can be fun for the teacher as well as students. I learned that my students had some ideas about science.
10. The child was quite open and eager to explore. Verbal praise smoothes the pupils' insecurities.
11. It is hard to let the pupil arrive at the conclusion.

In general they viewed the entire experience with mixed feelings.

1. The operation isn't as hard as it appears.
2. I noticed that I could start with a group but that science becomes individual.
3. Experience is the best teacher.
4. Children are always eager to learn, as well as we adults.
5. It has made me more competent and sure of myself in teaching science.
6. The program will be good for my class. It will develop thinking on their part.
7. The program is designed to develop the child's thinking processes rather than repeat facts.
8. Learning more effective questioning techniques.
9. The student can be corrected quicker and he learns more with this individual attention.
10. I learned that the process approach holds the child's interest longer and motivates curiosity. He is able to make comparisons and predictions and accept the outcome.
11. This program is good because it keeps the teacher as well as the child involved. You are willing to use what you know to find out what you don't know. One experience leads to another.

12. It takes many, many different things to understand the topic.
13. I really enjoy this method of teaching. I love the student participation and the joy of the student for his task.
14. A slow child can do as well as a fast child.
15. They paid attention the whole time.
16. Most activities work best with at least two in the group -- one to do and one to record.
17. I felt that I will need more training to feel relaxed and confident.

As they reflected on the materials with which they worked, they specified the following strengths of an inquiry approach to science instruction:

1. The program is flexible.
2. I feel that at some point all children will have some interest.
3. The activities can be done in large groups.
4. Good background is given. Knowledge is constantly reinforced and expanded.
5. Objectives are clearly stated.
6. More interest is shown with the working of these materials.
7. Guides to follow and goals to follow.
8. The teacher learns as the children learn.
9. Exact directions are given.
10. Objectives are correlated to activities.
11. The child has a chance to perform -- to actually do the experiments.
12. Step-by-step directions are given.
13. I think the active and physical participation in the experiment by the child was <u>far</u> superior to the kind of science we've been teaching so far. To the child it must be so much more fun.
14. Good organization of the lesson and workable ideas.
15. Teaches cognitive thinking and observing skills.
16. It leaves the teaching up to the child. The teacher only guides the discussion.
17. It highly motivates children since they are working with activities.
18. The lesson plans are included.
19. A rationale is given and a sequence of skills is provided so you know where you're headed.
20. It teaches the skills of learning, not just unrelated science "facts."
21. More structure in procedure and objectives.
22. Adequate supplies.
23. Good plans for each activity.
24. The material is there for this project.
25. The materials have suitability on each grade level.
26. The individual lessons are well organized and easy to follow.
27. This program stresses science <u>skills</u> which I have not found in other programs.
28. Many manipulative devices and ideas on the topic are at your fingertips.
29. I liked the teacher's explanation to concept in the guide more than the what to do for children.

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30. Pupil involvement.
31. Utilization of all the senses in learning rather than just sight and sound.
32. Flexibility in terms of use and units taught.
33. More meaningful - relevant.
34. Much more alive and interesting - student discoverer-oriented.
35. Helps teachers define and implement objectives and student needs.
36. The children are actually doing something.
37. The teacher's plan is well written.
38. It is helpful for the inexperienced science teacher to have specific directions to follow.
39. Involvement by pupils.

In a realistic and frank way they also described what they perceived as weaknesses of the program:

1. It takes too long to set up and become familiar with.
2. It has too many items to keep track of.
3. The terminology will be too difficult for the first year or three.
4. It's very time consuming.
5. The organization of the teacher's guide is hard to follow.
6. The program is too structured if brought in all at once. Some higher level units must depend on previous experiences the children would not have.
7. Equipment not always available.
8. Too tightly constructed to allow minds to wander to other correlated fields of science and or math.
9. Takes much preparation - running off work sheets, etc.
10. It would appear that availability of supplies (and misplacement) would be frustrating if some kind of organization were not set up.
11. There might be difficulty instructing a class of 33 children in this program.
12. The children have different cognitive levels and will therefore progress at different rates. However, the program is designed for small group instruction and does not readily lend itself to individual rates.
13. Needs some sort of tie together at end for all - maybe written.
14. Extra materials not in kit are sometimes difficult to round up.
15. Instructions are difficult to understand. This involves more planning time for personal research.
16. Use of metric system is difficult for me, probably more easily understood by the children.
17. Not enough time for preparing each project.
18. The materials are difficult to understand without explanation by science consultant.
19. It is somewhat inconvenient to hunt for materials in various places, but it is nice when they are available to use.
20. Besides the skill objectives, are there comparable objectives for science facts or does the child learn these facts through working out the skills?

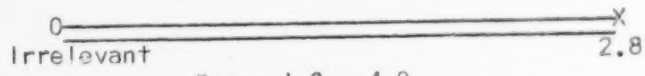
21. It might be hard to do with a class of 30 children at one time.
22. Logistics.
23. Inclined planes and some other apparatus appear to be rather flimsy and do not appear to be able to last for any great length of time.
24. It puts a great deal of responsibility on the teacher to "prepare": to gather materials, to plan.
25. A lot of preparation time is necessary for each lesson.
26. Some written work for organizing what was discovered.
27. Hierarchy - need to have used lower level of activity.

Following the two-day introduction, a one-day visitation in the classroom in April was scheduled. Most had initiated science instruction visits during the month. Some were elated and others were less-than-elated but sincerely working. By the end of June a smapling of the teacher perceptions of the program was conducted. This evaluation focuses on three aspects of the program:

1. Information in the module for the teacher's use
2. Structure of the program
3. Teacher attitudes about the experience

Information - or resources available to assess teaching strategies for inquiry oriented teacher's role were useful to the extent that the teachers found the materials relevant, adequate in detail and appropriate in level. On a rater scale from 0 to 5, their rankings are found in Table I. Generally they perceived the information provided as most helpful.

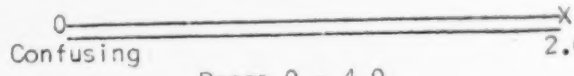
1. Relevance



Irrelevant — 4.0 Relevant

Range 1.0 - 4.0

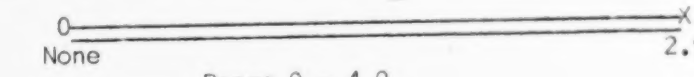
2. Helpfulness of Information in Teacher Education Modules



Confusing — 4.0 Very Helpful

Range 0 - 4.0

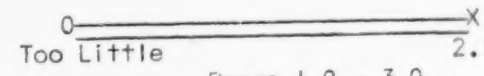
3. Worthwhileness of Information in Teacher Education Modules



None — 4.0 A Great Deal

Range 0 - 4.0

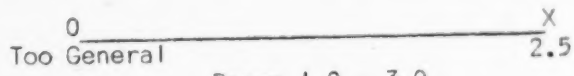
4. Amount of Information in Teacher Education Modules



Too Little — 4.0 Too Much

Range 1.0 - 3.0

5. Vocabulary Level of Teacher Education Modules



Too General — 4.0 Too Technical

Range 1.0 - 3.0

Table One

Participants' Perception of the Information Provided

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In dealing with structure, the teachers were to identify the extent to which the information was organized so that they knew when and where to go. As illustrated in Table Two, they found the pre-post tests helpful, the organization of the teacher education modules meaningful and the structure of the teacher education module functional.

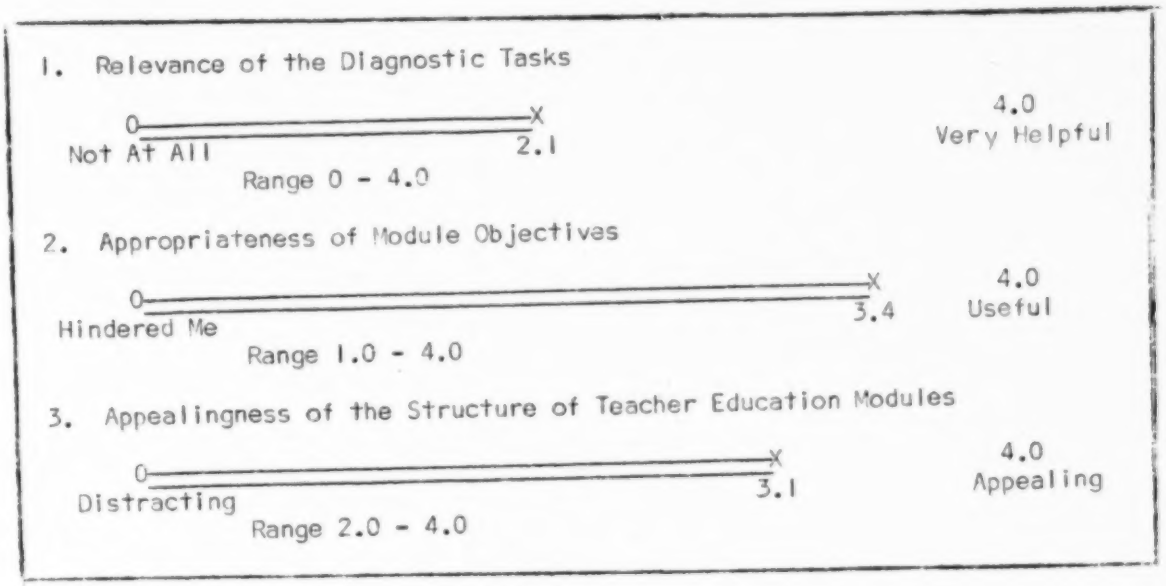


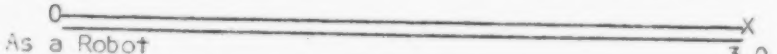
Table Two

Participants' Evaluation of the Structure
of the Teacher Education Module

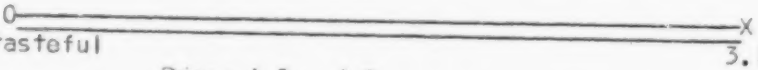
Attitudes toward a new program clearly influenced the long-term input of the program. As the teachers perceived the teacher education modules they found that they were favorably personal, found the experience positive and enjoyed working with them. Table Three summarizes these feelings. It is interesting to note that the group represented a wide range in attitude from negative to completely positive, but that the negative ones were definitely in favor of the modules.

The use of the Self Directed Guides to Personalizing Learning with the Francis Howell teachers suggests that most found the experience stimulating, and relevant to the classes. With the continuance of the study, it will now be possible to study the extent to which the joy, excitement and intellectual power of the teacher's experience is being shared in the learning opportunities of their children.

1. Feelings about How They Were Treated as a Person

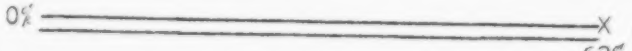


Range 0 - 4.0

2. 

Range 1.0 - 4.0

3. What Percent of Future Inservice They Would Like to Have Like This



Range 0 - 100%

Table Three

Participants' Personal Feelings About Experience
with Teacher Education Program

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